

**General Electric Systems Technology Manual**

**Chapter 11.0**

**Plant Support Systems**



## **TABLE OF CONTENTS**

|   |   |
|---|---|
| 11.0 PLANT SUPPORT SYSTEMS.....   | 1 |
| 11.0.1 Circulating Water System (Section 11.1) .....                          | 1 |
| 11.0.2 Reactor Building Service Water System (Section 11.2) .....             | 1 |
| 11.0.3 Reactor Building Closed Loop Cooling Water System (Section 11.3).....  | 1 |
| 11.0.4 Turbine Building Service Water System (Section 11.4).....              | 1 |
| 11.0.5 Turbine Building Closed Loop Cooling Water System (Section 11.5) ..... | 2 |
| 11.0.6 Service and Instrument Air Systems (Section 11.6).....                 | 2 |
| 11.0.7 Fuel Pool Cooling and Cleanup System (Section 11.7) .....              | 2 |
| 11.0.8 Refueling and Vessel Servicing System (Section 11.8) .....             | 2 |



## **11.0 PLANT SUPPORT SYSTEMS**

The water, air and fuel handling systems necessary for plant operational support are discussed in this chapter. The water systems provide water supplies required by plant processes, auxiliary cooling functions necessary to support plant equipment, and cooling functions to remove decay heat for forced cooldown of the reactor. The cooling water provided may be from a variety of sources such as lakes, rivers, oceans, cooling towers, or cooling ponds.

The air systems provide a continuous supply of compressed air of suitable quality and pressure for instruments, controls, and station use and to supply instrument air to the safety/relief valves and primary containment vacuum relief valves during all modes of plant operation including a Loss Of Coolant Accident (LOCA).

The refueling and vessel servicing systems provide the facilities and equipment for handling and storage of new and spent fuel, for vessel refueling, and for the servicing of reactor vessel internal components.

### **11.0.1 Circulating Water System (Section 11.1)**

The Circulating Water System (CWS) supplies cooling water to turbine condensers to reject heat from the steam cycle. The system also provides for dilution and dispersion of radioactive wastes released from the station.

### **11.0.2 Reactor Building Service Water System (Section 11.2)**

The Reactor Building Service Water System (RBSW) transfers heat from the reactor building components to the Long Island Sound, and provides an emergency source of cooling water to the reactor vessel and spent fuel pool.

### **11.0.3 Reactor Building Closed Loop Cooling Water System (Section 11.3)**

The Reactor Building Closed Loop Cooling Water (RBCLCW) System cools selected auxiliary equipment over the full range of plant operations. The RBCLCW System provides a closed cooling water loop between systems which are potentially radioactive and the service water system. This provides an additional barrier between the possibly contaminated systems and the service water discharged to the environment.

### **11.0.4 Turbine Building Service Water System (Section 11.4)**

The Turbine Building Service Water System (TBSW) supplies cooling water to non-safety related components located in the turbine building and rejects the heat to the Long Island Sound.

### **11.0.5 Turbine Building Closed Loop Cooling Water System (Section 11.5)**

The Turbine Building Closed Loop Cooling Water System (TBCLCW) cools selected auxiliary balance of plant equipment located in the turbine building and transfers that heat load to the Turbine Building Service Water System.

### **11.0.6 Service and Instrument Air Systems (Section 11.6)**

The Service and Instrument Air Systems provide a continuous supply of compressed air of suitable quality and pressure for instruments, controls, and station use and to supply instrument air to the safety/relief valves and primary containment vacuum relief valves during all modes of plant operation including a loss of coolant accident.

### **11.0.7 Fuel Pool Cooling and Cleanup System (Section 11.7)**

The Fuel Pool Cooling and Cleanup (FPCC) System is provided to remove heat from, and achieve purity and clarity in, the cask pool, fuel storage pool, fuel service pool and fuel transfer pool in the fuel building and the upper containment pool, separator storage pool, storage pool, and transfer pool in the containment.

### **11.0.8 Refueling and Vessel Servicing System (Section 11.8)**

The Refueling and Vessel Servicing System provides the facilities and equipment for handling and storage of new and spent fuel, for vessel refueling, and for servicing of reactor vessel internal components.